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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,711	03/28/2001	Kazuhiro Nakamura	012777-040	1302

7590 12/17/2003

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EXAMINER	
CHUNG, DAVID Y	
ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/818,711	NAKAMURA ET AL.	
	Examiner	Art Unit	
	David Y. Chung	2871	

-- The MAILING DATE of this communication appears on the cover she t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-23,26 and 27* is/are rejected.

7)☒ Claim(s) *24 and 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 2, 4, 5, 8-15 and 17-23 rejected under 35 U.S.C. 103(a) as being unpatentable over Oka et al. (U.S. 6,340,404) in further view of Aoyama et al. (U.S. 6,383,620).

As to claims 1 and 2, Oka et al. discloses an antiglare layer having a fine uneven surface formed on a transparent substrate and a layer having a low refractive index formed thereon. Note in figure 12A, the substrate 11, antiglare layer 12, and layer 13 having low refractive index.

Oka et al. does not teach an average mirror reflectance being less than 1.2 % or an average integral reflectance being less than 2.5 %. However, it was well known and obvious to make the reflection in the visible spectrum as low as possible, since the goal of an antireflection film is to minimize the amount of reflected light.

Oka et al. teaches forming the low refractive index layer from a fluorine polymer. See column 13, lines 30-35. Oka et al. does not teach using a fluorine polymer that is

cross-linkable by heat or ionization radiation. Aoyama et al. teaches that the strength and impact resistance of a coated resin layer can be improved by methods such as cross-linking with isocyanates, silanes, epoxy compounds, etc. The cross-linking reaction can be accelerated by actinic rays such as UV rays, electron beams, etc. See column 8, lines 33-45. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use a fluorine polymer cross-linkable by heat or ionization radiation because of the improved strength and impact resistance.

As to claims 4 and 5, Oka et al. discloses several examples having a haze value between 5 and 15%. The antiglare-antireflection layer of example A1 has a haze value of 9%. See column 24, lines 1-5.

As to claim 8, Oka et al. teaches that when polyvinylidene fluoride is used to form layer 13, the refractive index of the layer becomes 1.40. See column 13, lines 36-38.

As to claim 9, Oka et al. teaches improving the hardness of the antiglare layer by using an ionizing radiation curing resin containing a cross-linking agent as the binder resin. See column 10, lines 7-37.

As to claim 12, Oka et al. does not disclose the index of refraction of the antiglare layer. However, this is a result effective variable. The index of refraction had to be in a range that was high enough for the film to be manufactured by conventional means, and

low enough to exhibit satisfactory antiglare effects. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to design the low refractive index layer with an index of refraction as claimed because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

As to claims 10, 11, 13 and 14, Oka et al. teaches forming the antiglare layer from a mixture of polymethyl methacrylate beads having a particle diameter of 5 μm, an ionizing radiation curing resin, and ultra-fine ZnO particles. See column 27, lines 5-15. Figure 17 is a cross-sectional view showing the layer construction of the antiglare film of the present example.

As to claim 15, Oka et al. does not teach a low refractive index layer containing silicon oxide particles as the fine inorganic particles. However, silicon oxide particles were well known functionally equivalent alternatives to the zinc oxide particles disclosed by Oka et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use silicon oxide particles in the low refractive index layer because it was a functionally equivalent alternative to zinc oxide particles.

As to claims 17 and 18, Oka et al. does not teach the value of optical contact or value of clearness as claimed. The value of clearness and the value of optical contact are both result effective variables of maximizing the optical quality of the film versus

manufacturing cost. It would have been obvious to one of ordinary skill in the art at the time of invention to manufacture a film with the value of clearness and the value of optical contact as claimed because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

As to claims 19-23, Oka et al. teaches that the disclosed optical film can be used on surfaces of polarizing plates used in liquid crystal displays. See column 1, lines 10-15.

Oka et al. does not teach putting the polarizing plate with the antiglare and antireflection film on the outermost surface at the display side of a liquid crystal display. However, this was the conventional structure used in the vast majority of liquid crystal displays. The polarizing plate was usually formed on the outside of the display in order to simply the manufacturing. The antireflection and antiglare film had to be formed on the display side in order to reduce the amount of reflection and glare directed towards the viewer. It would have been obvious to one of ordinary skill in the art at the time of invention to form the polarizing plate with the antiglare and antireflection film on the outermost surface of the display side of a liquid crystal display because it was conventional, and conventional structures had the benefits of having well-understood behavior and well established supply chains and manufacturing methodologies.

2. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Oka et al. (U.S. 6,340,404) in further view of Kurata (SID 1998).

Oka et al. does not teach the CIE coloration values of the reflected light. However, the CIE coloration values claimed by applicant describe reflected light having no coloration. Kurata teaches that one of the goals of a reflection film was to achieve neutralization of reflection hue. See page 44. It was well known and obvious to do this in order to create a display without colors being skewed. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to make an antireflection film such that the reflected light had CIE values as claimed by applicant in order to achieve a display without colors being skewed.

3. Claims 7 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Oka et al. (U.S. 6,340,404) in further view of Aoyama et al. (U.S. 6,383,620) and Miyashita et al. (U.S. 5,759,643).

Oka et al. does not disclose the coefficient of friction of the low refractive index layer or the contact angle with water. However, Miyashita et al. teaches a fluorine-containing silane compound disposed on an antireflection layer for the benefit of preventing staining. This layer works by using a surfactant that controls the water contact angle and coefficient of friction. The coefficient of friction and contact angle with water are result effective variables which must be optimized to maximize the anti-staining properties while minimizing the cost of manufacturing. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to design the low

refractive index layer with the coefficient of friction and water contact angle as claimed because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 26 and 27 rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura et al. (JP 11-006902).

Nakamura et al. discloses a reflection preventing film suitable for mass production. The film comprises a high refractive index antiglare layer 4 and a low refractive index layer 1 formed over a base substrate 3. The low refractive index layer 1 contains a plurality of inorganic particles 11. The size of the inorganic particles is most preferably between 5 and 40 nm. One of the most desirable compounds for the inorganic particles is silicon dioxide. See column 5, lines 22-42. Note in table 5, the average reflectance within the range of 450 to 650 nm for examples 24 and 25 was 0.35% and 0.36% respectively.

Response to Arguments

Applicant's arguments filed September 30, 2003 have been fully considered but they are not persuasive. Oka et al. explicitly discloses forming the low refractive index layer by coating a resin composition as an alternative to using a vapor growth process. See column 13, lines 57-67. Furthermore, Aoyama et al. teaches improving the strength of a coated resin layer by cross-linking and that the cross-linking reaction can be accelerated by applying heat or other radiation. See column 8, lines 38-45. It would have been obvious to use a fluorine polymer cross-linkable by heat or ionic radiation in order to improve the strength of the low refractive index layer disclosed by Oka et al., and to reduce the amount of time necessary for the cross-linking reaction.

Allowable Subject Matter

Claims 24 and 25 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art did not teach a cross-linkable fluorine resin comprising: a silane compound containing a perfluoroalkyl group; or a fluorine containing co-polymer formed with a monomer for giving a cross-linkable functional group and a fluorine-containing monomer.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Chung whose telephone number is (703) 306-0155. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:00 pm.

David Chung
GAU 2871
12/10/03

KENNETH PARKER
PRIMARY EXAMINER